U.S. Army Garrison

Aberdeen Proving Grounds (APG)

CWA Inspection 9/16/14

General Discharge Permit No. 05-SF-5501

General NPDES No. MDR 055501

State Discharge Permit No. 05-DP-2517

NPDES Permit MD0003565

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EPA Inspector

- All photographs were taken by this inspector using a Nikon Coolpix P4 camera.

Background:

The Aberdeen Proving Grounds (APG) are located within Harford County, MD. The area consists primarily of the Aberdeen Area and the Edgewood Area. Others areas associated with APG include the Churchville Test Track, Carroll Island, Bowleys Quarters, and Gracie's Quarters. The Aberdeen Proving Grounds have been in operation since 1917 and is involved in the research, development, and testing of weapons systems, ordinance, and biological and chemical defenses.

APG is approximately 72,500 acres in size with 27,500 acres of land composing the Aberdeen Area and approximately 9,700 acres of land composing the Edgewood Area. The remaining acreage is the water acreage of Carroll Island, Bowleys Quarters, Gracie's Quarters, and the Churchville Test Track. A large portion of the acreage is marshy and wooded or submerged in water.

The APG installation is bordered to the west by U.S. Route 40, Swan Creek and the Susquehanna River to the north, the Chesapeake Bay to the east/southeast, and the Gunpowder River to the south. The Bush River divides the installation into two peninsulas with numerous streams and creeks flowing throughout the site before discharging into the Bush River, Gunpowder River, or directly into the Chesapeake Bay.

The Aberdeen Proving Grounds have (6) permitted outfalls. The outfalls located within the facility include the Gunpowder River, Dipple Creek, Bush River, Deer Creek(Churchville Test Track), Sod Run, and Woodrest Creek. There are also (2) Wastewater Treatment Plants (WWTP) located within the APG. The Aberdeen Area WWTP is owned and operated by The City of Aberdeen. The city is responsible for all operations and permit compliance. The second WWTP is called the Edgewood Wastewater Treatment Plant (State Discharge Permit No. 06-DP-2517, NPDES Permit MD0003565) and it is managed by APG.

There are 96 tenants on the property discharging to the WWTP's. There are no major Industrial Users and only a few minor industrial permits. The average flow through both WWTPs together is 25,000 gpd. The State of Maryland required APG to upgrade the Edgewood WWTP by July 2012. The needed upgrades were not completed in time and the EPA assisted APG by giving a grant of $37 million dollars to complete the necessary upgrades. All upgrades are expected to be completed by September of 2015.

Inspection:

The scope of Clean Water Act inspection consisted of site visits to all of the permitted outfalls; Gunpowder River (006), Dipple Creek (012), Bush River (014), Deer Creek (005), Sod Run (007), Woodrest Creek (013), and the Edgewood Area WWTP. This inspector also reviewed all related records, permits, monitoring requirements, reporting requirements, and management practices associated with the outfalls and Edgewood WWTP.

The first outfall visited was Outfall # 014 – Bush River. This area is 41 acres in size, has a low level of impervious surface area, and referred to as Drainage Area 6. Outfall #014 is located in the Aberdeen Area of APG at the Underwater Explosives Facility. APG uses large quantities of water to conduct munitions testing inside of a manmade reservoir. Depending on the testing being done, water can be either added or drained from the reservoir. If it is necessary to drain from the site, discharge must pass through a series of (4) settlement ponds before finally discharging into Bush River.

At the time of inspection, this inspector noted erosion under the outfall piping. (See Photo 1) Under the APG Stormwater Pollution Prevention Plan Section 6.1.1 – Preventative Maintenance, the facility is required to perform corrective maintenance on this outfall.

The second outfall visited was Outfall # 013 – Woodrest Creek. This area is also known as Drainage Area 5. The drainage area is located in the Aberdeen Area of APG, is approximately 62 acres in size, and has a low ground permiability. The primary features include roadways and research and development buildings. Stormwater from this area drains primarily from undeveloped and gravel roadways. Building 423 sits adjacent to the outfall and discharges cooling water from test equipment via Outfall #013. Renovations to the facility and conversions to air-cooled systems has decreased the volume of discharge received by this outfall.

At the time of inspection, this inspector has no areas of concern associated with Outfall #013.

The third outfall visited was Outfall #007 – Sod Run. The area is also known as Drainage Area 3. The drainage area consists of 20 acres and has a low level of imperviousness. Located in the Aberdeen Area of APG, the primary features are a vehicle maintenance building, materials storage building, hazardous materials storage building, administrative building, fueling area, vehical wask rack, UST for fuels, and ASTs for fuel, used oil, and antifreeze. Stormwater from the fueling area and vehicle wash rack drains south into a closed loop system which filters and recycles the water. Previously, stormwater drained into the vehicle wash rack where it discharged into a settling pond before passing through an oil/water separator. The stormwater was then emptied into a series of three settling ponds before finally discharging into Sod Run.

At the time of inspection, this inspector heard the sound of water entering into the drainage pipe (See Photo 2) that exits on the opposite side of a burm into a drainage area. At the time of inspection, the vegetation was very high and this inspector could not see where the water exited into the pond. At the time of inspection, the water level in the drainage area was low. However, previous high water level marks on the soil and bent vegetative growth shows a pattern of water flow exiting the drainage area towards Sod Run. This inspector has a concern that the “closed loop” is not fully closed and during heavy rainfall events, discharges may reach Sod Run.

The fourth outfall visited was Outfall #012 – Dipple Creek. This area is also referred to as Discharge Area 4. The drainage area is approximately 55 acres and has a high level of impervious surface. The primary features include residential housing, administrative buildings, research and development facilities, roadways, and parking. Located on the Aberdeen Area of APG, stormwater drains primarily from the residential and office building areas. The drainage area is largely developed and paved surfaces.

At the time of inspection, this inspector has no areas of concern associated with the Outfall #012 site visit.

The fifth outfall visited was Outfall #005 – Deer Creek. This area is referred to as Drainage Area 1. It is the largest drainage area having 134 acres and a low imperviousness. The primary features of the drainage area include an unpaved vehicle test track, vehicle maintenance building, fueling station, USTs for fuels, ASTs for de-icing fluids and propane, vehicle wash rack, administrative buildings, and parking. The track is named the Churchville Test Track. Stormwater drains from the test track and fueling area towards the northern end of the facility where it is collected in a series of catchment basins before emptying into a sedimentation pond and finally discharging into Deer Creek. Stormwater from the maintenance building area and vehicle wash racks drains east into a sedimentation pond and passes through an oil/water separator before a final sedimentation pond and discharging into Deer Creek.

At the time of inspection, this inspector's area of concern was the broken intake inside the Sedimentation Pond.

The last outfall visited by this inspector was Outfall #6 – Gunpowder River. The area is referred to as Discharge Area 2. It is located in the Edgewood Area of APG and includes the permitted site Building E1464, also known as Henry Field. The drainage area is approximately 18 acres and it has a low level of imperiousness. The primary features of this area include a vehicle maintenance building, a hazardous materials storage building, a fueling station, vehicle wash rack, and above ground storage tanks (AST) for fuels, used oil, and antifreeze. Stormwater from the fueling area and hazardous materials storage building drains west to the vehicle wash rack area. The stormwater is then piped to an oil/water separator before emptying into a sedimentation pond and finally discharging into Gunpowder River. Stormwater from the maintenance building, materials storage, and parking area drains to the north where it is collected into a drainage ditch before being channeled to Edgewood WWTP.

At the time of inspection, this inspector had no areas of concern with Outfall #6 – Gunpowder River.

The final site visit conducted was to the Edgewood Area WWTP. As previously stated, Edgewood WWTP is under repair while still in operation. The contracted company to complete the needed repairs is called Ulliman Schutte Construction, LLC. The Project Engineer is Monty D. Simon. As part of the project agreement, APG gives project oversight responsibility to the general contractor who is to comply with all permit requirements.

The Edgewood Area WWTP is rated to 3 mgd. The peak max that the system could manage is 10 mgd. The average daily flow is approximately 1 mgd. Mr. Simon escorted this inspector on a tour of the facility. Due to construction activities, the contractors must close some clarifiers and sedimentation tanks in sequence to preform upgrades to each part of the system. Temporary tanks and hoses are being used to help facilitate storage capacity and piping. While the construction activities are taking place, the normal operation of the WWTP is continuing except the by-passing of rock filtration system. The influent is sent to a clarifier and sedimentation tank before treatment.

Areas of concern at the Edgewood WWTP for this inspector include a leaking raw influent tank made of zinc (see Photo 4). The leaking has been going on long enough to rust the side of the tank. The discharging influent gathers into a puddle in the grass around the base of the tank. Rainfall events would cause this puddle to grow and flow down slope towards the perimeter of the WWTP.

Adjacent to the leaking zinc tank is a trench that goes under the service road and collects stormwater (see Photo 5). The blue hoses and PVC piping that connects the influent wastewater to the zinc tank has some leakage that gathers in the trench along with any stormwater. The contractor pumps the muddy water into the primary clarifier. If the mud is too thick to pump out, water is added with a garden hose to increase viscosity. The area of concern is the mixture of raw influent and stormwater exiting the trench area and into the surrounding grass (see Photo 6).

After the primary clarifiers and sedimentation tanks, the wastewater is generally passed through filtration before disinfection. During the inspection, the filtration process was bypassed to disinfection by using a large, blue rubber hose (see Photo 7). At the time of inspection, there were three distinct areas of leakage coming from the hose. Photos 8 and 9 show the areas along the silt fencing where the untreated wastewater leaking from the blue hose is discharging off site.

Other areas of concern related to the WWTP are Best Management and House Keeping issues. Photos 10 and 11 show inadequate silt fencing in need of maintenance. The WWTP is bordered by the Chesapeake Bay on the backside of the property. The contractor uses the grassy area next to the Bay as a storage and set up area for materials. At the time of inspection, there were numerous paint cans (see Photo 12), plastic bottles, and food wrappers littered around the area and along the water's edge.

Records Review:

After completing all site visits, this inspector reviewed records related to all Stormwater Permits, General Discharge Permits, Discharge Monitoring Reports, inspection records, training records, NPDES permits, and Annual Reports.

Discrepancies found in the records:

- The Facility failed to test for Total Residual Chlorine as required for Outfall 12 (Dipple Creek) multiple times (Oct, Nov, Dec, of 2013) and (Jan, Feb, March, April, May, June, and July of 2014).
- The Facility failed to test for Total Residual Chlorine as required for Outfall 13 (Woodcrest Creek) multiple times (Oct and Nov of 2013) and (June and July of 2014).
- The Facility failed to notify the State of a June 2014 pH exceedance. The pH at Outfall 006 (Gunpowder River) was below the required 6.5.
- Outfall 007 (Sod Run) is considered by the Facility as a closed loop and is not sampled. The State Discharge permit requires sampling.
- The Facility did not provide a Description of Methodology used to estimate flow on any of the outfalls as required by the permit.
- The Facility failed to notify the State for a General Discharge Permit application renewal and the permit No. 05-SF-5501 expired November 2009.
- The Facility does not have a Biomonitoring Program Plan as required by the State.
- The Facility failed to notify the State of the names and MSDS's of detergents used by the Facility as required.
- The Facility failed to do monthly oil water seperator inspections.
- The Facility failed to maintain outfall identification numbers at any of the permitted outfalls.
- The Facility was not able to provide training records for Facility personnel.
- The MS4 was not signed or dated as required.

- All photographs were taken by this inspector using a Nikon Coolpix P4 camera.

Photo 1- Structural erosion below Outfall #014 - Bush River

Photo 2 - Outfall #007 exit point to outside drainage area.

Photo 3 - Outfall #005 - Broken intake in sedimentation pond.

Photo 4 - Untreated influent wastewater leaking from collection tank.

Photo 5 - Trench adjacent to leaking collection tank collecting stormwater and leaking influent.

Photo 6 - Influent from trench entering grassy area.

Photo 7- Untreated influent leaking from a hose that is bypassing the filtration on its way to the clarifier.

Photo 8 - Untreated Influent from leaking blue hose by passing silt fencing.

Photo 9 - Leaking influent from blue hose discharging under silt fencing.

Photo 10 - Silt fencing in need of maintenance.

Photo 11 - Silt fencing improperly maintained.

Photo 12 - One of many paint cans, plastic bottles, and general trash within 5-15 yards from the Chesapeake Bay.